

Christine Clancy, P.E.  
DPW Commissioner

TO: John Leahy, Mayor and School Committee Chair and School Committee Members

FROM: Christine Clancy, P.E., DPW Commissioner

DATE: August 19, 2020

RE: Informational Update: School Reopening HVAC Status

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The Department of Public Works (DPW) is coordinating with the School Department to prepare for the FY20/21 School Year. While reopening efforts cover various infrastructure needs, the primary focus is to optimize ventilation within each school building given the concerns related to the ongoing pandemic. The City is following the reopening guidelines provided by the Massachusetts Department of Elementary and Secondary Education (DESE). The age of the HVAC equipment and layout of each building make each opportunity unique. Below is a status update of efforts completed to date by the DPW and coordinated with the School Department. Progress is tracked on a daily basis so that schools can be open to students and staff for the start of school.

1. **Evaluation of HVAC System.** The DPW Lands & Buildings Department, working with other departments, are evaluating each building's HVAC system to confirm that each component is repaired, serviced and/or cleaned. This includes evaluating 408 rooftop exhaust fans, univents in hundreds of classroom spaces, boilers, air handler units, chillers, condensers, pumps, heating controls and other heating and A/C components. This prioritized work began in July and will continue through the month of August and into September as needed. The City is contracting with outside contractors as needed for servicing and repairs required for boilers, compressors, and A/C systems.

The rooftop exhaust fans are critical ventilation component of each HVAC system. Their function is to remove air from within a building and produce a negative pressure in the system, which then allows fresh air through open dampers, supply vents, and windows to enter the school. As of today, 408 exhaust fans have been evaluated, of which 50% of them have been repaired or are already fully operational. The remaining 50% of the fans have been evaluated and parts have been ordered or will be ordered this week. The repairs vary between just needing a belt to motor or hood repairs or complete motor replacements. DPW Lands & Building staff is prioritizing these repairs and working on overtime as needed to make all exhaust fans fully functional.

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2. **Maximize Outdoor Ventilation.** DESE recommends optimizing outdoor ventilation where feasible and weather permitting. Ventilation systems are recommended to be running for longer durations at least 2 hours before and after school and with intake components fully open to maximize amount of fresh air being drawn into a building. Access to windows in each classroom space is recommended to supplement ventilation systems when weather permitting. Per the Facilities Analysis being presented at the 8/19 School Committee Meeting, 94% of all school windows are operational. DPW is working with the School Department to confirm that at least one but preferably two windows are fully operational in each classroom. DPW is currently going around to each school to grease the window components. Parts such as ballasts are being ordered to make window necessary repairs. Interior classrooms or spaces without windows will not be utilized.
3. **Filter Assessment.** DESE recommends evaluation of the filters within HVAC systems to see where levels of air filters may be increased. The City has contracted with an outside consultant, Garcia, Galuska, and DeSousa Consulting Engineers to review the existing HVAC system filter capabilities within some of the school buildings to see where filters can be upgraded to higher grades, which filter out smaller particles in the air. Many of the City's HVAC systems were originally designed to use MERV 8 filters. Newer HVAC systems, such as for the new Lowell High School campus, will have higher rated filters (MERV 13 or 14), which filter out smaller particles within the air. Some older HVAC systems were not designed to accommodate the newer filter ratings and upgrading to these filters without the proper evaluation could actually restrict ventilation, which is a primary goal of the HVAC system.

Based on the recommendations provided by Garcia, Galuska, and DeSousa Consulting Engineers, larger units in schools will be upgraded to either MERV 11 or 13 filters. DPW is currently seeking procurement of these filters. Univents, which are in classrooms, will be kept at MERV 8 per the recommendations of our consultant. These as well as all other filters will be changed every 3 months. Air purifiers will be provided to each classroom to effectively provide similar filtration of that as a MERV 13 filter.

DESE's reopening guidelines and other reopening literature recommend schools to consider supplementing ventilation systems with HEPA rated air cleaning devices. Upon review of this recommendation and per the recommendations of Garcia, Galuska, and DeSousa Consulting Engineers, the City is procuring 1000 HEPA (high efficiency particulate air/absorbing) cleaning devices that will be provided in each classroom space and common spaces as needed. Each unit can clean up to 900 square feet of space every half hour. The HEPA filter collects particles of up to 0.3 microns in size. These particles

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*DPW Commissioner*

include dust, allergens, pollen, dander, odors, mold, and bacteria. Each unit has an air quality sensor button that changes colors as the purifier is in contact with particles.

Many municipalities and school districts across the country are trying to procure these HEPA devices. The City was fortunate to obtain an order of 1000 units in July and they have already started to arrive in the City. These devices can be controlled by each teacher and school staff member. The school custodians will be responsible for replacement of the filters per the manufacturer's guidelines which recommends every 9-12 months. These 1000 HEPA air cleaning purifiers cost the City approximately \$400,000. While this is a related COVID-19 cost, these units can be used for future school years.

**4. Cleaning HVAC components.** While assessments and necessary repairs are important to optimize the function of HVAC components, cleaning of HVAC components are also important. This effort is being coordinated with the School Department custodians and DPW Lands & Buildings employees. Progress is tracked on a biweekly basis. School custodians are cleaning all classroom univents and supply and return registrars within the school interiors. DPW Lands & Buildings are cleaning fans, motors, belts, and other HVAC components within rooftop units, penthouses, and boiler rooms.

**5. Other Ongoing Projects.** While DPW and School Facilities Department are prioritizing efforts on optimizing HVAC systems within each building, there are various other reopening efforts and projects being completed across the 30 school buildings. The DPW and School Department are coordinating with the Building, Health, Water, and Fire Departments to confirm that all necessary repairs and inspections are completed prior to the school year.

The ongoing roof and boiler MSBA projects are being coordinated with the school reopening efforts. Boilers are being replaced at Bailey, Daley, Greenhalge, McAuliffe, Rogers/STEM, and Sullivan Schools, and roofs are being replaced at Bailey and Sullivan Schools. These projects are part of the MSBA's 2019 Accelerated Repair Program (ARP), representing an estimated \$13.6 million worth of work. The MSBA will fund approximately 80% of this work, with the City funding the remaining 20%. The projects are all on track to be completed by mid-October. Any work that remains to be completed once the schools are occupied will be done when students are not present in the buildings.

Fire Escape repairs are being completed by Chapman Waterproofing at the Moody, Malloy, Greenhalge, Cardinal O'Connell and Washington Schools. Repairs will be completed the week of August 24<sup>th</sup>.

This update is intended to provide a snapshot of the facility reopening efforts being completed by DPW and in coordination with the School Department. The optimization of school ventilation and the function of each buildings school HVAC systems are of paramount importance to the

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*DPW Commissioner*

City at this time. DPW is working extended hours as needed to complete this work prior to school reopening. Progress is tracked on a daily basis. Additional updates regarding school reopening efforts will be made to the School Committee prior to the start of school.

Thank you.

CC: Eileen Donoghue, City Manager  
Dr. Joel Boyd, Superintendent of LPS  
Dr. James Hall, Chief Operations Officer of LPS  
Kara Keefe Mullin, Assistant City Manager  
Alex Magee, Assistant to the City Manager, Interim Director of Finance and Administration (DPW)